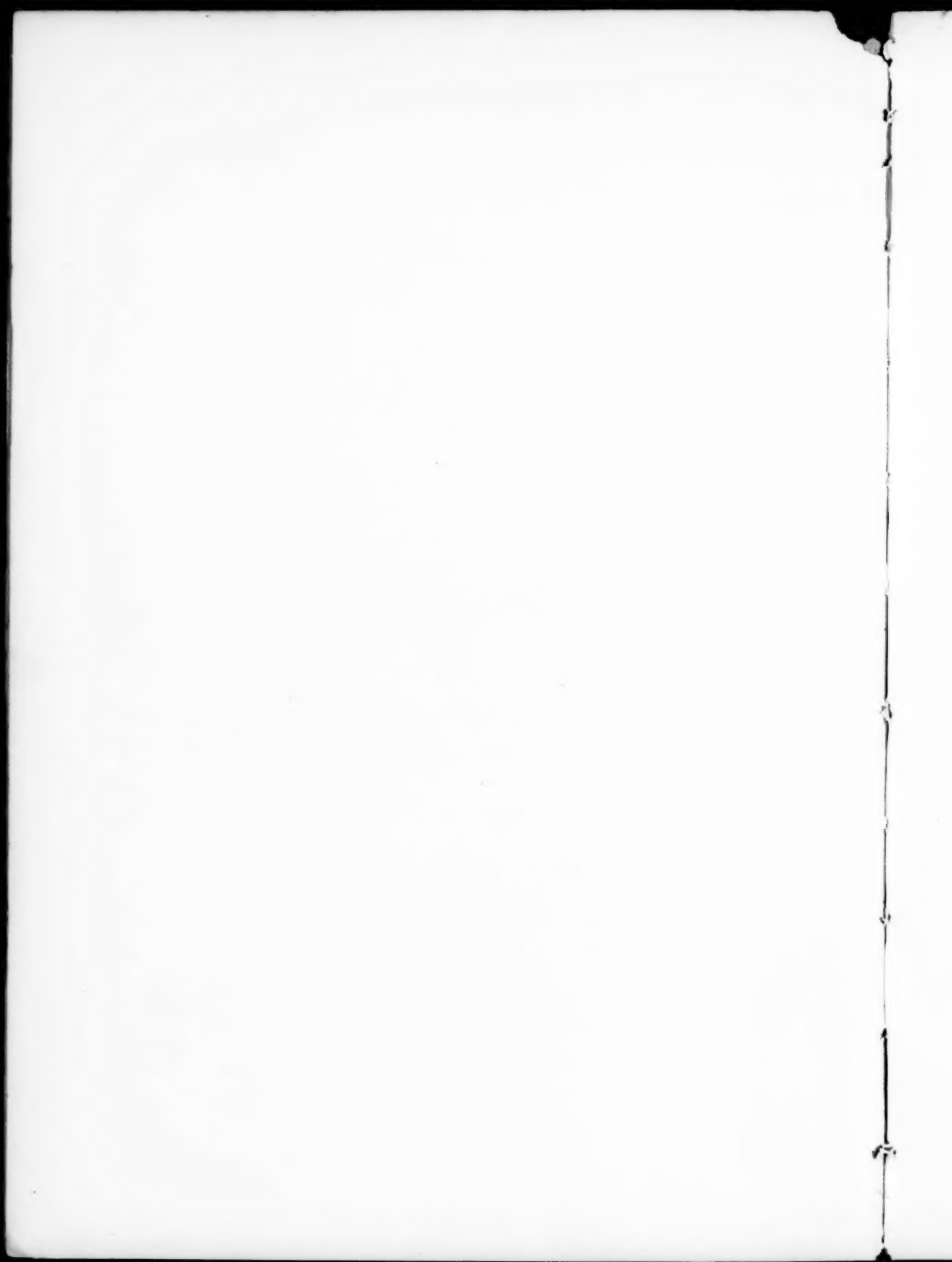


THE ASTROPHYSICAL JOURNAL



# THE ASTROPHYSICAL JOURNAL

An International Review of Spectroscopy and  
Astronomical Physics

## EDITORS

GEORGE E. HALE  
*Mount Wilson Solar Observatory of the  
Carnegie Institution of Washington*

EDWIN B. FROST  
*Yerkes Observatory of the  
University of Chicago*

HENRY G. GALE  
*Ryerson Physical Laboratory of the  
University of Chicago*

## COLLABORATORS

JOSEPH S. AMES, *Johns Hopkins University*; ARISTARCH BELOPOLSKY, *Observatoire de Poulkova*;  
WILLIAM W. CAMPBELL, *Lick Observatory*; HENRY CREW, *Northwestern University*; NILS  
C. DUNÉR, *Astronomiska Observatorium, Upsala*; CHARLES FABRY, *Université de  
Marseille*; CHARLES S. HASTINGS, *Yale University*; HEINRICH KAYSER, *Universität  
Bonn*; ALBERT A. MICHELSON, *University of Chicago*; HUGH F. NEWALL, *Cam-  
bridge University*; ERNEST F. NICHOLS, *Dartmouth College*; ALFRED PEROT,  
*Paris*; EDWARD C. PICKERING, *Harvard College Observatory*; ANNIBALE  
RICCÒ, *Osservatorio di Catania*; CARL RUNGE, *Universität Göttingen*;  
ARTHUR SCHUSTER, *The University, Manchester*; KARL SCHWARZ-  
CHILD, *Astrophysikalisches Observatorium, Potsdam*.

---

VOLUME XXXVI

JULY-DECEMBER, 1912



THE UNIVERSITY OF CHICAGO PRESS  
CHICAGO, ILLINOIS

Published  
July, September, October, November, December, 1912

Composed and Printed By  
The University of Chicago Press  
Chicago, Illinois, U.S.A.

# CONTENTS

## NUMBER I

	PAGE
PHOTOGRAPHIC OBSERVATIONS OF COMET 1911 c (Brooks). E. E. Barnard . . . . .	I
TERTIARY STANDARDS WITH THE PLANE GRATING, THE TESTING AND SELECTION OF STANDARDS. Charles E. St. John and L. W. Ware . . . . .	14
ON THE DETERMINATION OF THE ORBITAL ELEMENTS OF ECLIPSING VARIABLE STARS. II. Henry Norris Russell . . . . .	54
SELECTIVE ABSORPTION OF LIGHT ON THE MOON'S SURFACE AND LUNAR PETROGRAPHY. R. W. Wood . . . . .	75
REVIEWS: Outlines of Applied Optics, P. G. Nutting (A. C. Lunn), 85.	

## NUMBER II

THE SYNTHETIC DEVELOPMENT OF RADIATION LAWS FOR METALS. Edward P. Hyde . . . . .	89
ELEMENTS OF THE ECLIPSING VARIABLES <i>W Delphini</i> , <i>W Ursae Majoris</i> , AND <i>W Crucis</i> . Henry Norris Russell . . . . .	133
ON A NEW METHOD OF DETERMINING THE ANGULAR DIAMETERS OF STARS BY MEANS OF ELLIPTICALLY POLARIZED LIGHT. S. Pokrowsky . . . . .	156

## NUMBER III

YERKES ACTINOMETRY. J. A. Parkhurst . . . . .	169
THE ABSORPTION SPECTRUM OF TELLURIUM VAPOR AND THE EFFECT OF HIGH TEMPERATURE UPON IT. E. J. Evans . . . . .	228
ON DARKENING AT THE LIMB IN ECLIPSING VARIABLES. I. Henry Norris Russell and Harlow Shapley . . . . .	239
ON CONVERGENCE FREQUENCY IN SPECTRAL SERIES. Fernando Sanford . . . . .	255
REVIEWS: Die optischen Instrumente, Dr. Moritz von Rohr (Stanley C. Reese), 263.	

## NUMBER IV

	PAGE
THE ATTRACTION OF SUN-SPOTS FOR PROMINENCES. Frederick Slocum . . . . .	265
ELEMENTS OF THE ECLIPSING VARIABLES <i>W Delphini</i> , <i>S Cancri</i> , <i>SW Cygni</i> , and <i>U Cephei</i> . Harlow Shapley . . . . .	269
BAND SPECTRA OF ALUMINIUM, CADMIUM, AND ZINC. Emily E. Howson . . . . .	286
OBSERVATIONS OF THE SPECTRUM OF <i>Nova Geminorum</i> No. 2. Walter S. Adams and Arnold Kohlschutter . . . . .	293
THE PRIMARY STANDARD OF LIGHT. Herbert E. Ives . . . . .	322
THE INFLUENCE OF TEMPERATURE ON THE PHENOMENA OF PHOSPHORESCENCE IN THE ALKALINE EARTH SULPHIDES. Herbert E. Ives and M. Luckiesh . . . . .	330

## NUMBER V

ON THE DEVIATION FROM LAMBERT'S COSINE LAW OF THE EMISSION FROM TUNGSTEN AND CARBON AT GLOWING TEMPERATURES. A. G. Worthing . . . . .	345
THE INTEGRATED SPECTRUM OF THE MILKY WAY. E. A. Fath . . . . .	362
THE <i>Algol</i> VARIABLE <i>RR Draconis</i> . Frederick H. Seares . . . . .	368
ON DARKENING AT THE LIMB IN ECLIPSING VARIABLES. II. Henry Norris Russell and Harlow Shapley . . . . .	385
REVIEWS: <i>Bijdrage tot de Kennis van Lijnenspectra</i> , T. Van Lohuizen (F. A. Saunders), 409.	